Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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The differential psychological distress of populations affected by the COVID-19 pandemic

Coronavirus disease 2019 (COVID-19) initially outbroke in Wuhan, China in December 2019 and promptly became a pandemic worldwide within the following two months. The public health emergencies resulting from COVID-19 are negatively impacting the mental health of the population and increasing the incidence of psychological crises (Xiang et al., 2020). Early identification of populations in the first stages of psychological crisis will allow for the efficient implementation of interventional strategies (National Health Commission of China, 2020). The clinical characteristics of psychological distress have not been well established across the populations affected by the COVID-19 pandemic, although a general increased level of mental distress has been reported from both the general public and frontline medical personnel (Kang et al., 2020; Qiu et al., 2020).

Therefore, we designed a pilot and cross-sectional study to identify the characteristics of psychological distress across populations affected by the COVID-19 pandemic. The app-based, anonymous questionnaire was designed to survey the level of psychological distress, and the study was conducted in the Zhongshan, one of prefecture-level cities in Guangdong province, P. R. China, from February 15 to February 29, 2020. A total of 205 participants responded and completed the questionnaires. The Chinese version 9-item Patient Health Questionnaire (PHQ-9) and 7-item Generalized Anxiety Disorder (GAD-7) scale were employed to evaluate the prevalence and severity of psychological distress within patients newly recovery from COVID-19 infection, individuals under quarantine, and the general public. A total score of $\geq$10 for both the PHQ-9 and GAD-7 was defined as depression and anxiety respectively. The severity of psychological distress was classified with the standard thresholds: Minimal or none (0–4), Mild (5–9), Moderate (10–14), Severe ($>$ 15) for both the PHQ-9 and GAD-7.

An increased prevalence of depression (29.2%) was found predominately in patients who experienced COVID-19 infection ($p = 0.016$), while the prevalence of anxiety was not statistically different across the three groups ($p = 0.154$) as shown in Table 1. Trends for an increased prevalence of depression comorbid with anxiety ($p = 0.086$) were identified in both patients who experienced COVID-19 infection (21.1%) and the general public (22.4%) compared to those in quarantine. Both patients who experienced COVID-19 infection (19.3%) and the general public (14.3%) also had a greater proportion of severe depressive symptom ($p = 0.002$) as shown in Table 1. Moreover, patients who experienced COVID-19 infection and the general public more likely to demonstrate depressed mood ($p = 0.038$) and somatic symptoms (all $p < 0.01$) in the sub-items of the PHQ-9, compared to individuals under quarantine. Anxiety-like behavior, including becoming easily annoyed or irritable, manifested primarily in the general public and patients who experienced COVID-19 infection ($p < 0.01$).

To the best of our knowledge, this is the first study aimed at exploring the psychological health across populations with different levels of exposure to the COVID-19 epidemic. Our study revealed differential levels of psychological distress in patients who experienced COVID-19 infection, individuals under quarantine, and the general public. The vulnerability to psychological distress across populations in the COVID-19 pandemic could be attributable to various factors, including gender, social support, specific experiences with COVID-19 infection, length of isolation, and amount of exposure to the media (Brooks et al., 2020; Li et al., 2020). The preliminary findings from our study suggest that timely identification of psychological distress and precise classifying of the mental health needs across populations will facilitate development of targeted psychological interventions for individuals in epidemics of emerging infectious diseases.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have influence the work reported in this correspondence

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Table 1
Demographic and clinical characteristics of patients who experienced COVID-19 infection, individuals under quarantine, and the general public.

	Patients who experienced COVID-19 infection (n = 57)	Individuals under quarantine (n = 50)	General public (n = 98)	F/χ^2	*P* value
Gender n (%)				6.57	**0.037**
Male	29 (50.9)	27 (54.0)	34 (34.7)[a]		
Female	28 (49.1)	23 (46.0)	64 (65.3)[a]		
Age (years)	46.9 ± 15.37[b]	36.2 ± 10.91	29.6 ± 12.69[b]	30.80	< **0.001**
Educational Level n (%)**				6.80	0.147
Junior middle school or less	17 (30.9)	13 (26.0)	41 (41.8)		
Senior middle school	15 (27.3)	16 (32.0)	16 (16.3)		
College or more	23 (41.8)	21 (42.0)	41 (41.8)		
Marital status n (%)				21.69	< **0.001**
Single	8 (14.3)	14 (28.0)	49 (50.0)		
Married	44 (78.6)	34 (68.0)	45 (45.9)		
Divorced or other	5 (7.1)	2 (4.0)	4 (4.1)		
Hometown n (%)				78.39	< **0.001**
Not Hubei province	18 (31.6)	43 (86.0)	92 (93.9)		
Hubei province	39 (68.4)	7 (14.0)	6 (6.1)		
Prevalence of Depression n (%)	21 (29.2)[c]	6 (9.8)	61 (34.7)	8.284	**0.016**
Prevalence of Anxiety n (%)	15 (20.8)	5 (10.2)	43 (19.6)	3.741	0.154
Depression comorbid with Anxiety n (%)	12 (21.1)	6 (8)	22 (22.4)	4.91	0.086
Severity of depressive symptoms n (%)				20.26	**0.002**
None	21 (36.8)	35 (70.0)	49 (50.0)		
Mild	18 (31.6)	10 (20.0)	15 (15.3)		
Moderate	7 (12.3)	3 (6.0)	20 (20.4)		
Severe	11 (19.3)[d]	2 (4.0)	14 (14.3)		
Severity of anxiety symptoms n (%)				8.86	0.182
None	31 (54.4)	36 (72.0)	60 (61.2)		
Mild	14 (36.8)	9 (18.0)	15 (15.3)		
Moderate	4 (26.7)	4 (8.0) *	7 (7.1)		
Severe	8 (32.0)	1 (2.0) *	16 (16.3)		

* Expected count less than 5; ** educational level of two respondents were not available
a Significant difference between the general public and the other two groups (p value < 0.01);
b Significant difference between group analysis with Bonferroni post-hoc analysis (all p values < 0.01);
c Statistical significance compared to individuals under quarantine with adjusted p values (Bonferroni method);
d Statistical significance compared to individuals under quarantine with adjusted p values (Bonferroni method).
e Significant difference in group level shown as bold p values.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.bbi.2020.04.031.

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